

Biophysics Research Support at NASA/MSFC

Karr, LJ

NASA/Marshall Space Flight Center, EM10/BLDG 4464, Huntsville, AL 35812

Biophysics is a developing program out of NASA's Space Life and Physical Sciences Division. The program consists of four areas: Biological Macromolecules, Biomaterials, Biological Physics, and Fluids for Biology. Marshall Space Flight Center (MSFC) is responsible for technical support for Biological Macromolecules and Biomaterials. MSFC has played a key role in Biological Crystal Growth in Microgravity since its inception over 30 years ago. After several interruptions to the program due to the Space Shuttles Challenger and Columbia incidents, and more recent programmatic shifts within NASA, the program is once more active and MSFC is supporting several Microgravity Experiments onboard the International Space Station. From these experiments, NASA is expecting the achievement of structures from biologically important macromolecules, including many membrane proteins. Additionally it is hoped to conclusively show with significant numbers of macromolecules, the benefits to growing crystals under microgravity conditions. Moreover, several experiments are planned to determine the physical parameters behind these successes. Marshall Space Flight Center has considerable capabilities to support investigators, including X-Ray Diffraction equipment, Biochemical and Molecular Biology equipment, and equipment for measuring crystal face growth rates and the solubility of macromolecules at various temperatures.

A new area presently being evaluated for inclusion in the Biophysics Program at MSFC, is Biomaterials. A workshop in Biomaterials was recently held as part of the broader scope of a NASA-sponsored MaterialsLAB Workshop, April 15-16, 2014, in Arlington, Virginia. Many responses to a Request for Information call were discussed at the workshop. Because of the interest shown by the research community, another workshop focused solely on Biomaterials will be held within the Materials Research Society Fall Meeting, November 30 – December 5, 2014, in order to reach out an even broader group of researchers.